

APPENDIX A

Finally Rejected Claims on Appeal

1. (Cancelled).
2. (Previously Presented) The method of Claim 6, wherein the first metal comprises tungsten and the second metal comprises aluminum.
3. (Previously Presented) The method of Claim 6, wherein depositing comprises a selective chemical vapor deposition.
4. (Original) The method of Claim 3, wherein depositing comprises depositing a ratio of first metal thickness over the conductive element to first metal thickness over insulating surfaces of the dual damascene structure of greater than about 10:1.
5. (Previously Presented) The method of Claim 6, wherein filling comprises flowing aluminum at a temperature between about 400°C and 550°C.
6. (Previously Presented) A method of forming an integrated circuit, comprising:
 - forming a dual damascene structure in insulating material over a semiconductor substrate, the dual damascene structure comprising a trench and a contact via extending from a bottom of the trench to expose a conductive element;
 - depositing a first metal selectively over the conductive element relative to insulating surfaces of the dual damascene structure to partially fill the contact via; and
 - filling a remainder of the contact via with a second metal, the second metal being more conductive than the first metal,
 - wherein depositing the first metal comprises filling the contact via to a height between about one-third and two-thirds of a height of the contact via.
7. (Previously Presented) The method of Claim 6, wherein depositing the first metal comprises filling the contact via to a height between about one-half and two-thirds of a height of the contact via.
8. (Previously Presented) The method of Claim 6, wherein filling comprises overflowing the contact via to at least partially fill the trench with the second metal.
9. (Original) The method of Claim 8, wherein filling comprises a hot aluminum deposition.

Appl. No. : 10/038,305
Filed : January 2, 2002

10. (Original) The method of Claim 9, further comprising following the hot aluminum deposition with a cold aluminum deposition.

11-16. (Cancelled).

17. (Previously Presented) A method for forming an integrated contact plug, comprising:

forming a dual damascene contact via in insulating material, wherein the dual damascene contact via has a height extending from a conductive element at a bottom of the contact via to a bottom of a dual damascene trench directly over the contact via;

depositing a first metal to fill between about one-thirds and two-thirds of the height of the contact via; and

filling a remainder of the contact via with a second metal, wherein the second metal is more conductive than the first metal and partially fills the trench.

18. (Original) The method of Claim 17, wherein depositing comprises filling the contact via to between about one-half and two-thirds of the height of the contact via.

19. (Original) The method of Claim 17, wherein the first metal comprises tungsten.

20. (Original) The method of Claim 17, wherein the second metal comprises aluminum.

21. (Original) The method of Claim 17, wherein the contact via and the trench are lined with a barrier layer before depositing the first metal.

22. (Original) The method of Claim 21, wherein the barrier layer comprises a metal nitride.

23. (Original) The method of Claim 17, wherein the contact via and the trench are lined with an adhesion layer before depositing the first metal.